

Market Transition and Gender Gap in Earnings in Urban China*

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Abstract

In this article, we examine the relationship between market transition and gender gap in earnings in urban China. We analyze change in the gender gap in human capital, political capital, labor-force placement, and family structure; change in the amount of monetary return to these determinants; and the changing significance of these sources of influence. We do so by analyzing two national samples from the 1988 and 1995 Chinese Household Income Project (CHIP) and city-level data for 1995. We found no longitudinal change nor city-level variation in the gender gap in earnings. Despite this stability, the proportion of the gender gap in earnings attributable to education and occupational segregation increased over time. This change is disproportional, occurring largely only in the most marketized cities. In these highly marketized cities, the significance of market-related mechanisms — education and occupation and industry-placement — has increased, while the contribution of redistribution-related mechanisms — affiliation with the state sector, party membership, and seniority — has decreased. These changes indicate that the Chinese market transition is a nonlinear, cumulative process.

China's post-1980 economic reforms led to profound transformation that has spurred scholarly interest in the impacts of market transition on income distribution (Bian & Logan 1996; Griffin & Zhao 1993; Khan et al. 1992; Nee 1989, 1991, 1996; Parish & Michelson 1996; Xie & Hannum 1996; Zhou 2000) and career mobility (Walder 1995; Walder, Li & Treiman 2000; Zhou, Tuma &

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Moen 1996, 1997). More recent research on gender inequality is in line with this interest, using large-scale data sets to analyze how men and women obtain nonfarm work opportunities and raise their economic well-being in the fast-changing rural society (Entwisle et al. 1995; Matthews & Nee 2000; Michelson & Parish 2000). Attention to the urban setting, however, is rare and limited to a single city (Bian, Logan & Shu 2000), and systematic analysis at regional or national levels is yet to be offered.

Most recent published studies used indirect measures of marketization. Measures such as passage of time (Bian & Logan 1996; Gerber & Hout 1998; Nee 1989, 1991; Zhou 2000), economic growth (Xie & Hannum 1996), or mode of market exchange (Nee 1996; Parish & Michelson 1996) have been used as proxies of marketization. Controversies in empirical analyses and theoretical conclusions on the impact of marketization arise, in part, from these inconsistent and sometimes problematic approaches to operationalize the degree of market transition (Cao & Nee 2000; Nee & Matthews 1996; Szelényi & Kostello 1996).

This article aims to bridge these gaps. Our analysis examines change in the gender gap in earnings in urban China with national survey data from the 1988 and 1995 Chinese Household Income Projects (CHIP). We first measure differences over time between 1988 and 1995 to show change or stability in both the gender gap in earnings and the sources of this gap. Using the 1995 data, we further examine intercity variations in both gender gap in earnings and the sources of this gap using a direct measure of marketization. Using comparisons both over time and across cities, we draw conclusions about the impact of marketization on the gender gap in earnings.

The Impact of Market Transition on the Gender Gap in Earnings

To frame our analysis in a broad scholarly dialogue, we consider three competing hypotheses that point to different directions of change in gender gap in earnings. Market transition theory argues that the transition to a market economy has positive implications for gender equalization in China. A market economy honors efficiency and productivity, while a socialist redistributive economy benefits those with positional power and political capital (Nee 1996; Nee & Matthews 1996). The control over resources thus shifts from political disposition to market institutions. Thus gender, an individual trait that is not correlated with productivity, has diminishing bearing on an individual's position in the system of social stratification during China's market transition. It was implied that this change takes place progressively from less marketized localities to more marketized locales (Nee 1989, 1991, 1996; Nee & Matthews 1996).

More recently, Nee and Cao (2002) argued that transformations in remaking the social and economic institutions in postsocialist societies tend to be incremental and that continuity within the existing institutions is likely to persist, particularly at the early stages of market transition. Only when the scale and the strength of the market economy reach a "tipping point" will discontinuous changes become dominant. It thus can be derived that the gender gap in earnings will diminish only in localities with a highly mature market economy.

Others predict an increase in gender inequality during market transition. According to this argument, market transition erodes the power of the state both as employer and advocator of women's rights (Honig & Hershatter 1988) because the transition to a market economy implies a shift of power from the state as the resource distributor to a market participant. Supporting evidence includes an increasing number of women asked by their work units to stay home with a small percentage of their base salaries (Wu 1995) now that profit-driven firm managers have greater incentives to reduce labor costs and more authority to adjust hiring, job assignments, and wage assignments (Honig & Hershatter 1988; Lee 1995; Ran 1988; Robinson 1985; Wu 1995). In addition, market transition may increase the role of the family, which also discriminates against women (Davis 1995; Davis-Friedmann 1991; Entwisle et al. 1995).

Still a third view is that market transition has no inherent implications for inequality (Walder 1996). This position not only asserts that market transition does not necessarily generate a coherent change in gender inequality, but also implies that claiming that market or state is an equalizer is too general and abstract because assumptions about either institution do not logically lead to testable hypotheses about changes in gender inequality (Bian, Logan & Shu 2000; Parish & Busse 2000; Whyte 2000). Prior studies show a remarkably stable gender gap in earnings in urban China. Retrospective reports from a 1993 Tianjin sample indicate that in 1978, women's wages were 86.8% of men's, and this percentage remained almost unchanged through 1993 (Bian & Logan 1996, Table 3). A 20-city sample in 1994 in which gender was included as a control variable also shows a remarkably stable gender effect, with women's wages being approximately 14% to 19% lower than men's between 1978 and 1993 after controlling for age, education, occupation, and work-place sector (Zhou 2000).

Research on gender inequality in market economies instructs us to focus attention on changes in institutions and policies that affect women's economic status relative to men's (see a review by Marini 1989). These institutions and policies include those that give women less education and political standing, those that pressure them to invest more in housework and child rearing, those that place them in different kinds of occupations, sectors, and industries, and finally those that grant them different wages for jobs demanding the same level of skills. We believe that it is fruitful to go beyond general and abstract state-

ments to more accurately assess the factors that may have changed the relative economic status of Chinese women in the cities during marketization.

Marketization and Sources of the Gender Gap in Earnings

Sociological explanations of the persistent gender-based wage differentials in market economies focuses on human capital development and the labor market structure (Brinton 1988, 1993; England 1992; England 1988 et al.; Marini 1989; Marini & Brinton 1984). The "human capital development regime" highlights the social structures and mechanisms that prepare women for and place them into different jobs from men (Brinton 1988, 1993; Marini & Brinton 1984), and the institutional perspective centers on a gendered labor market, pointing to the differential reward structure for male- and female-typed jobs (England 1992; England et al. 1988).

The perspective on human capital development regimes contends that women's lower and different human capitals account for their persistently lower wages than men's. Families, schools, employers, and individuals themselves are seen as rational actors in determining the amount and kind of investment in young women's human capital (Brinton 1988, 1993). Because women are expected to become full-time homemakers after a few years of paid work, these actors work together to channel young women into different academic programs and separate careers from young men. Large efforts are made by these actors to develop young women's skills and qualifications for marriage and motherhood. This explanation guides us to look at a number of important "supply-side" sources of gender inequality in wages in urban China. The first is the Chinese family. The second source is human capital, especially the difference in the level and type of education between men and women. And the third source is political capital, an important dimension of which is Communist party membership.

The perspective on gendered labor market argues that the segregation of women in female-typed, low-paying occupations is the most direct source of the gender gap in earnings (Marini & Fan 1997). Neoclassical economists argue that women choose these jobs because they compensate female workers through advantages such as higher starting wages and lower penalties for intermittent employment (Becker 1975; Zellner 1975). Sociologists contend that empirical data fail to substantiate these arguments because pay discrimination exists for both men and women in predominantly female occupations (England 1992; England et al. 1988). Socialization, devaluation of female-typed jobs, and the imbalance of male-female power contribute to this concentration of women in low-paying jobs. The prereform Chinese labor market was characterized as a segmented labor market between the

advantageous state sector and the disadvantageous "collective" sector; this segmentation is gendered because men were concentrated in the former and women in the latter (Bian 1994). Though market reforms since 1980 have not reversed this order between the state and collective sectors, private, semiprivate, and hybrid sectors have increasingly provided high-paying jobs, attracting more workers from the state and collective sectors. It is unclear how men and women workers are placed in the segmented labor markets and how the different wage structures embedded in these different sectors might have discriminated against women before and after the rise of marketization.

We review prior work on five sources of gender gap in earnings in urban China: human capital, political capital, labor-force placements (occupation, industry, and sector placement), family structure, and wage discrimination. We then speculate about the extent to which marketization may have altered these sources of any gender gap in earnings.

HUMAN CAPITAL

The most frequently documented source of a gender gap in earnings is human capital. Studies from the U.S. indicate that about half the gender gap in earnings is due to gender differences in measures of human capital (Mincer & Polachek 1974, 1978). In urban China, despite a constant decline in the gender gap in education, women still lag behind men in average number of years of schooling and in number of bachelor's degrees received (China Educational Commission 1996; Lavelly et al. 1990). Moreover, as a result of a state policy requiring working women to retire five years earlier than men, a persistent gender gap is created in years of work experience (Bian, Logan & Shu 2000). Because seniority is positively associated with salary increase, women are largely excluded from salary increase beyond age 50.

Other analyses of 1988 and 1995 CHIP samples show a substantial increase in income return to both education and work seniority from 1988 to 1995 and from less marketized cities to more marketized cities (Bian & Zhang 2002; Hauser & Xie n.d.). This implies that each additional year of schooling or work seniority yields a much higher return with marketization. Because the gender gap in education is declining at a much slower pace than the increase in return to education, we expect that this higher return to education will lead to a growing portion of the gender gap in earnings attributable to education. Moreover, given the observation that the gender gap in work seniority might have been enlarging because women are hit more seriously by growing unemployment and crowded labor markets, the increasing return to seniority will also lead to a growing portion of the gender gap in earnings attributable to the gender gap in work seniority. We thus hypothesize a rising significance of human capital with marketization in accounting for the gender gap in earnings.

POLITICAL CAPITAL

Membership in the Communist party in China denotes the individual's certified political loyalty to the Communist regime and has important bearings on the rewards to the individual by the regime (Walder 1995). In fact, Communist party membership in post-1949 China is a significant form of political capital; party members have been significantly more likely than nonmembers to be promoted to positions of authority (Bian 1994; Bian, Shu Logan 2001), to receive party sponsorship for further education and job training (Li & Walder 2001), and therefore to receive high wages and in-kind incomes (Bian, Shu & Logan 2001; Walder, Li & Treiman 2000). Among the 15% to 20% of the working adults in urban China who were recruited into the Communist party, the male-female ratio was 2:1 in the 1980s and 1990s, according to prior studies based on data from various locations (Bian, Shu & Logan 2001; Lin & Bian 1991; Zhou, Tuma & Moen 1996). How much of the gender gap in earnings is actually due to the disproportional allocation of party membership to men? Our analysis shall shed light on this question.

China's market reforms were implemented under a durable Communist regime. Forms of political capital under this regime — primarily Communist party membership — are persistently meaningful, and the regime makes no special alteration to the gender gap in party membership (Bian, Shu & Logan 2001; Walder, Li & Treiman 2000). Findings about income returns to party membership during the reforms, however, are mixed, pointing to either declining or persistent returns (see review by Nee & Cao 1999). When cadre status is used as a measure of political capital, recent analysis of the 1988 and 1995 CHIP samples reveals increasing return to cadre status with marketization (Bian & Zhang 2002). If we take a conservative position that no change in returns occurs with party membership and that the gender gap in party membership will not change during the reforms, we thus expect that the significance of political capital remains unchanged with marketization in explaining the gender gap in earnings.

LABOR-FORCE PLACEMENT

Wage levels vary across jobs, industries, and economic sectors in both market capitalism (Kalleberg, Wallace & Althausen 1981) and state socialism (Bian 1994). China's prereform urban economy lacked occupational labor markets, and wage disparities were redistributive in nature and regulated largely by a state-collective sector dualism, by the hierarchical structure of work organization from central to local levels, and by the strategic importance of industries in state planning (Bian 1994; Walder 1986, 1992; Whyte & Parish 1984). Chinese women consistently receive less advantageous placement in both the prereform and the reform era (Bian 1994; Bian & Logan 1996; Lin & Bian

1991; Whyte 1984; Zhou, Tuma & Moen 1996, 1997). On the whole, women are more heavily concentrated in the collective sector, which offers significantly lower wages than the state and private sectors, and are underrepresented in high-wage industries or party and government offices (China State Statistical Bureau 1997, Table 4-9:106-7). This disproportional placement of men and women workers between the two economic sectors was a significant source of the gender gap in earnings before reforms (Bian, Logan & Shu 2000).

While this pattern of segregation of women workers in the disadvantageous economic segments is expected to continue, economic reforms have brought several changes to labor-force placements. First, market competition grew both within and outside the state sector, resulting in rising wage levels in the new sector and differentiated wage levels within the state sector. Second, wage inequalities increasingly were associated with industry and occupation because industries indicate the power of the employer in factor and product markets and occupations tap the technology, production process, and forces in the market for products. Finally, job assignments by state redistributors were gradually eliminated and unemployment significantly rose, pushing workers to locate and relocate jobs in emergent labor markets. Emergent labor markets have been found to generally favor men over women, providing men with more flexibility to make job changes and other adjustments to a dynamic economic environment. With this in mind, we anticipate two impacts of changing labor-force placements on the gender gap in earnings.

The first impact of marketization on labor-force placement is the declining significance of sector-based gender segregation. When the state sector starts to lose its advantage over the nonstate sector, working in the state becomes less desirable, making it easier for women to move into this sector. As a result, the gender gap in affiliation with the state sector will decline with marketization. This change, coupled with a declining return to becoming a state employee relative to the new sector, produces a decline in the significance of the gender gap in earnings attributable to sector affiliation. We hypothesize that the significance of sector-based segregation in accounting for gender gap in earnings is likely to decline with marketization.

The second impact of marketization on labor-force placement is the rising significance of occupation- and industry-based gender segregation. Although state redistributors continue to differentially allocate economic resources, product and labor markets now raise levels of competitive wages in certain industries and occupations. This implies that even if men and women's relative labor-force placements do not change with marketization, the gender gap in earnings will be more attributable to occupation and industry than to economic sector. So when wage inequalities increasingly are associated with occupation and industry as a result of increasing market competition, and if men are better able to become employed in high-paying occupations or high-income

industries, this will also enlarge the gender gap in earnings. In summary, we hypothesize that the significance of occupation- and industry-based segregation in accounting for the gender gap in earnings is likely to increase with marketization.

FAMILY STRUCTURE AND WAGE DISCRIMINATION

Marriage, parenthood, and grandparenthood exert differential influences for men and women.¹ Because we expect little gender difference in these measures of family composition and little change in this effect with marketization, we include measures only of family composition as controls in our analyses. Wage discrimination occurs when equally qualified women and men perform the same or comparable tasks but receive different rewards. Because of our data limitation² and the difficulty in quantifying the elusive forms of discrimination,³ we estimate only the *residual*⁴ amount of gender gap in earnings unaccounted for by gender differences in human capital, political capital, labor-force placement, and family structure and show how this residual varies over time and across cities of different level of marketization. We do not, however, infer any conclusions about discrimination from this estimation.

Data and Measures

The data are from the 1988 and 1995 Chinese Household Income Project (CHIP; Griffin & Zhao 1988; Riskin, Zhao & Li 1995). Each year, CHIP conducts two surveys, one for urban residents and another for rural residents. We use data only from the urban surveys, which follow a multistage sampling methodology. In the 1988 survey, the first step was to select 10 province-level administrative units (out of a total of 30). These 10 are Beijing, Shanxi, Liaoning, Jiangsu, Anhui, Henan, Hubei, Guangdong, Yunnan, and Gansu. Then, 55 cities (out of a total of 434) were selected from these 10 provinces to represent various urban conditions in China (Eichen & Ming 1993); however, our examination shows that apex metropolis, central metropolis, and regional cities — cities of higher socioeconomic standings — are oversampled.⁵ The 1988 sample contains 31,827 individuals from 9,009 households. Similarly, in the 1995 survey, the same 10 provinces plus Sichuan were selected. Then 69 cities and towns (out of a total of 226) were selected. Again, large metropolitan central cities are oversampled.⁶ The 1995 sample contains 21,696 individuals from 6,931 households. These household surveys collected information from all household members. For this analysis, we treat all household members in the samples who are active in the labor force and ages 18 and older as independent observations, assuming that within-household clustering is negligible.⁷

We identify three sources of cash compensation that workers earn at the workplace: regular salary, bonus and subsidies, and earnings from private businesses. In the 1988 sample, annual earnings are calculated as the sum of monthly regular salary multiplied by 12, monthly bonuses and subsidies multiplied by 12, and annual earnings from private businesses. In the 1995 sample, the annual earnings are calculated as the sum of total salary (bonuses, subsidies, and stipends for temporarily laid-off workers), and earnings from private businesses including earnings as owners of private enterprises and operators of private businesses.⁸ We have no reason to believe that the different ways in which cash compensations are measured will contribute systematically to the earnings difference between the two years.

The two measures of human capital used in the analysis are education and seniority. We use two measures of education: one is a categorical variable differentiating four levels of attained education, and the other is a continuous variable measuring years of schooling. In the 1988 sample, we extrapolate years of schooling from levels of attained education following Mincer (1974) and Xie and Hannum (1996) using the following scales: less than three years of school = 1, less than primary school = 4, primary school = 6, junior high school = 9, senior high school = 12, vocational and trade school = 13, community college = 15, and college and graduate school = 17. Both variables are available in the 1995 sample.

Seniority is years of work experience. In the 1988 sample, no direct measure of seniority is available, and thus we calculated seniority as the difference between current age and the age at exit from school, similar to Mincer (1974) and Xie and Hannum (1996). The following scales are used: primary school and lower = 14, junior high school = 16, senior high school = 19, vocational and trade school = 20, community college = 22, and college and graduate school = 24. Years of work experience is available in the 1995 sample. Construction and extrapolation of education and seniority variables for the 1988 sample might have introduced a small amount of additional measurement error.

We use Communist party membership as the sole measure of political capital in the analysis, and this variable is available in both samples.

Work sectors were differentiated into three categories: the state, the collective, and the new sector. The state sector includes government agencies and state-owned enterprises at the state, province, and local levels. The collective sector consists of urban collective work units and enterprises. The new sector is independent from state control and is highly heterogeneous, encompassing private businesses, joint ventures, foreign investment, township enterprises, and other hybrid forms of ownership. This variable is constructed from three variables that measure individuals' work-unit sector, work status, and occupations. Individuals employed in enterprises of these new forms of

ownership are substantially underrepresented in both 1988 and 1995 CHIP samples⁹ mainly as a result of undersampling of individuals employed by private enterprises and individual entrepreneurs (*geitihu*). The CHIP samples thus cannot afford a reliable estimation of the impact on gender gap in earnings produced by the growth of the new sector, particularly the private sector.

Crude measures of occupation and industry were used, which are not comparable in the two surveys. To make the classification compatible, we collapsed some of the categories and further reduced the number of categories of occupation and industry. In doing so, we not only made the categories consistent across the samples, but also combined categories that have similar sex-ratio compositions of workers and similar salary rates. We identified five occupational categories: owners and operators of private businesses, professional and technical workers, cadres and managers of government agencies and state firms, office clerks, and skilled and unskilled workers. Similarly, to make the classification of industry comparable between the two surveys, we identified five industries based on the same principles we used for occupation: manufacturing; mining, construction, and transportation; commerce, real estate, finance, and service; education, culture, and public health; and party and government agencies. In doing so, we made sure that the same occupations and industries remain in the same categories in both years.

For family structure we use marital status, presence of at least one child younger than five, and presence of at least one grandchild younger than five to identify individual's marital status, parenthood, and grandparenthood. The marital status variable was readily available in the samples, but the parenthood and grandparenthood variables were constructed using information from the household sample. We first identified all children younger than five and then identified the relationship between these children and the individuals in our samples. Only a negligibly small number of relationships (2.9% in 1988 and 1.1% in 1995) were unidentified using this method.

We also used city-level data compiled from the *China Statistical Yearbook* and statistical yearbooks of selected cities for 1995.¹⁰ Fourteen county-headquarters for which we have no reliable macrolevel data were excluded from this analysis. As a result, 1,174 individuals in the nonagricultural labor force were excluded from this across-city comparison.

Three city-level variables were used to construct a measure of marketization: (1) the proportion of nonstate and collective employees, which is the ratio of workers in nonstate and collective firms out of total number of workers; (2) the proportion of industrial output generated by nonstate enterprises, which is the ratio of industrial output by nonstate enterprises out of the total industrial output by all the enterprises; and (3) the proportion of foreign investment, which is the ratio of foreign investment out of the total investment in the city. These three administrative-unit level variables were not

available for 1988, so we only merged the 1995 city-level data with 1995 individual-level CHIP data. Thus our data allow for an across-city comparison for only 1995.

Analysis

Our analysis consists of both a trend analysis and a cross-sectional comparison of cities. In the trend analysis, we derive conclusions about the impact of marketization based on comparison of 1988 and 1995 CHIP samples. Because marketization is only one of multiple transformations experienced in China during this period, it is impossible to infer from this comparison over time the exact extent to which marketization influenced the gender gap in earnings. In the second analysis, we examine the relationship between gender gap in earnings and marketization using data from the 1995 CHIP and a city-level index of marketization. By incorporating across-city comparison using a direct measure of marketization, we seek further evidence to corroborate the findings from our comparison over time.

TREND ANALYSIS

Gender Gap in Earnings in 1988 and 1995

Table 1 presents gender difference in annual earnings by type of earnings and level of education. Overall, gender gap in earnings remains remarkably stable between 1988 and 1995. In 1988, women made 83.9% of men's earnings. In 1995, women made 83.8% of men's earnings. This gender gap is consistent with findings from 20 cities in 1994 (Zhou 2000) and findings from a Tianjin sample collected in 1993 (Bian, Logan & Shu 2000). The gender gap remains the same despite a 2.27 times increase in earnings between 1988 and 1995, without adjusting for inflation, which implies that the absolute increase in men's earnings surpasses the increase in women's earnings. Between 1988 and 1995, men's earnings increased by 4,618 yuan while women's earnings increased by only 3,869 yuan. This gender disparity in amount of increase in earnings between 1988 and 1995 is larger for those with less education than for those with more education. Between 1988 and 1995, the average earnings of college-educated men increased by 6,264 yuan while earnings of college-educated women increased by 4,925 yuan. Earnings of men with primary education increased by 3,721 yuan while earnings of women with primary education increased by only 1,918 yuan.

The gender gap in earnings varies with education, and this covariation remains largely unchanged between 1988 and 1995. The higher the education, the smaller the gender gap in earnings. In 1988, women with primary education

TABLE 1: Gender Difference in Annual Earnings (Unit: RMB Yuan) by Education, Labor Cohort, and Employment Status — 1988 and 1995 Chinese Household Income Project

	Male			1988 Female			Gender Gap	
	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Percent of M's	t-value
Total earnings	2,031	1,142	9,228	1,703	1,002	8,411	83.9	20.25***
Earnings by education								
Primary school and lower	2,157	1,159	986	1,622	969	1,256	75.2	11.90***
Junior high	1,962	1,145	3,423	1,665	967	3,360	84.9	11.53***
Senior high and technical/ vocational school	1,956	1,147	3,229	1,721	1,081	3,105	88.0	8.39***
College and above	2,253	1,077	1,590	1,968	803	690	87.3	6.25***
Earnings by labor cohort								
1978–88	1,485	1,044	2,438	1,398	822	2,896	94.2	3.32**
1966–77	2,100	1,174	3,548	1,831	1,128	3,805	87.2	10.03***
Before 1966	2,366	1,021	3,242	1,941	860	1,711	82.0	15.48***
Earnings by employment status								
Permanent and long-term contract ^a	2,026	1,010	9,066	1,721	962	8,088	85.0	20.23***
Short-term contract	1,136	725	82	959	609	198	84.4	1.95
Private enterprises and individual businesses	4,007	5,865	71	2,254	2,851	85	56.3	2.30*

made only 75.2% of their male counterparts' earnings, and this percentage rises to 84.9% for those with junior high school education and 88.0% for those with senior high school education and vocational school education. Among those with college education, women make 87.3% of men's earnings. This finding continues in 1995. Women with primary education only made 75.4% of their male counterparts' earnings, while those with a junior high school education made 79.7%, and those with a senior high school education made 88.0%. Among the college educated, women make 91.7% of men's earnings.

The gender gap in earnings varies by labor cohort in 1988 and remains constant across labor cohorts in 1995. In 1988, women who entered the labor force after 1978 made 94.2% of their male counterparts' wages. This percentage is lower (87.2%) for the labor cohort who entered the labor force during the Cultural Revolution (1966 to 1977). The gender gap in earnings is the largest among the pre-Cultural Revolution labor cohort with women earning 82.0% of men's earnings. This variation may be partially due to gender differences in life-course trajectory of earnings as gender disparity increases with seniority and also partially due to larger gender disparity in education among the older cohorts (Whyte 1984). In 1995, there was no labor cohort difference in gender

TABLE 1: Gender Difference in Annual Earnings (Unit: RMB Yuan) by Education, Labor Cohort, and Employment Status — 1988 and 1995 Chinese Household Income Project

	Male			1995 Female			Gender Gap	
	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Percent of M's	t- value
Total earnings	6,649	3,932	6,237	5,572	3,426	5,569	83.8	15.76***
Earnings by education								
Primary school and lower	5,878	3,208	276	4,432	2,887	333	75.4	5.85***
Junior high	6,196	3,665	1,735	4,937	3,126	1,778	79.7	10.96***
Senior high and technical/ vocational school	6,416	3,928	2,426	5,644	3,356	2,447	88.0	7.38***
College and above	7,517	4,144	1,800	6,893	3,822	1,011	91.7	3.94***
Earnings by labor cohort								
After 1988	4,664	3,518	774	4,027	2,961	834	86.3	3.91***
1978–88	5,840	3,648	1,569	5,070	3,067	1,828	86.8	6.60***
1966–77	7,164	3,990	2,611	6,253	3,628	2,420	87.3	8.49***
Before 1966	7,820	3,726	1,252	6,874	3,147	448	87.9	5.19***
Earnings by employment status								
Permanent	6,874	3,883	4,848	5,873	3,388	4,011	85.4	12.95***
Long-term contract	5,845	3,757	1,077	4,887	3,180	1,164	83.6	6.49***
Short-term contract	5,496	4,266	108	4,021	3,068	185	73.2	3.15**
Private enterprises and individual businesses	6,279	5,608	62	5,109	5,522	47	81.4	1.09

^a In 1988 CHIP data, permanent workers and workers on long-term contract were not differentiated.

* $p < .05$ ** $p < .01$ *** $p < .001$

gap in earnings. Women of all four labor cohorts made similar percentages (ranging from 86.3% to 87.9%) of men's earnings. It remains unclear, however, whether this is due to declines in gender differences in career trajectories, to an overall trend of declining gender gap in education, particularly among the youngest cohort (Lavelly et al. 1990), or to a trend toward a declining gender gap in earnings. Among the three labor cohorts that are in both samples, gender gap in earnings for the 1966–77 cohort remained unchanged between 1988 and 1995, while the gender gap for the 1978 to 1988 cohort increased and the gender gap for the pre-Cultural Revolution cohort decreased. Multiple factors contribute to the emergence of such a pattern. We caution against deriving a general assessment about the trend of change based on this information. It is particularly difficult to draw conclusions about change over time when this change can be seen as a result of combined historical change and life-course change.

TABLE 2A: Means, Standard Deviations, and t-values for Gender Differences of Variables Used in the Analysis — 1988 Chinese Household Income Project

	Male		Female		t-value for Gender Gap ^a in 1988	t-value for Change in Gender Gap ^b
	Mean	Std. Dv.	Mean	Std. Dev.		
	1988					
Human capital						
Education ^{c, d}	10.98	3.18	10.04	3.17	20.07***	-1.95*
Seniority ^{c, d}	21.84	11.80	20.17	11.58	9.59***	1.82
Political capital						
Communist party (CCP Member = 1) ^d	.34	.48	.12	.32	37.69***	-3.83***
Sector						
State ^d	.84	.37	.71	.45	21.29***	-4.25***
Collective ^{c, d}	.14	.35	.27	.44	-20.81***	4.27***
New Sector ^{c, d}	.02	.15	.03	.16	-1.25	.61
Occupation						
Owners and operators of private business ^{c, d}	.01	.12	.01	.11	1.81	.19
Professional and technical workers ^{c, d}	.16	.36	.16	.37	-.31	1.44
Cadres and managers of state organizations ^{c, d}	.11	.31	.02	.14	23.62***	3.87***
Office workers ^{c, d}	.26	.44	.21	.41	7.08***	-7.64***
Workers ^{c, d}	.47	.50	.60	.49	-17.46***	5.39***
Industry						
Manufacturing ^{c, d}	.42	.49	.45	.49	-.77	4.62***
Mining, construction, and transportation ^{c, d}	.18	.37	.11	.30	14.47***	-4.67***
Commerce, real estate, finance, and service ^{c, d}	.16	.36	.22	.40	-9.54***	-.63
Education, culture, and public health	.13	.33	.16	.35	-3.08***	-1.28
Party and government agencies ^{c, d}	.12	.32	.06	.21	17.30***	-3.28***
Family structure						
Marital status (married = 1) ^{c, d}	.82	.38	.83	.37	-1.53	-1.73
Child younger than 5 ^{c, d}	.15	.35	.15	.36	1.48	-.39
Grandchild younger than 5	.03	.17	.03	.16	-1.31	.65
N	9,269		8,454			

Note: The sum of all the dummy variables for sector, occupation, and industry does not add up to 1.00 as a result of rounding.

TABLE 2B: Means, Standard Deviations, and t-values for Gender Differences of Variables Used in the Analysis — 1995 Chinese Household Income Project (Cont'd)

	Male		Female		t-value for Gender ^a Gap in 1995
	Mean	Std. Dev.	Mean	Std. Dev.	
	1995				
Human capital					
Education ^{c, d}	11.04	2.99	10.38	2.87	12.26***
Seniority ^{c, d}	20.92	10.34	17.83	8.92	17.59***
Political capital					
Communist party (CCP member = 1) ^d	.34	.56	.15	.36	22.04***
Sector					
State ^d	.85	.35	.76	.43	12.69***
Collective ^{c, d}	.11	.32	.20	.40	-13.04***
New sector ^{c, d}	.04	.20	.05	.21	-1.27
Occupation					
Owners and operators of private business ^{c, d}	.02	.13	.02	.13	.44
Professional and technical workers ^{c, d}	.22	.41	.23	.42	-1.47
Cadres and managers of state organizations ^{c, d}	.17	.37	.06	.23	19.29***
Office workers ^{c, d}	.19	.39	.22	.42	-4.27***
Workers ^{c, d}	.40	.49	.47	.50	-7.65***
Industry					
Manufacturing ^{c, d}	.44	.49	.41	.49	2.59**
Mining, construction, and transportation ^{c, d}	.11	.30	.08	.26	5.57***
Commerce, real estate, Finance and service ^{c, d}	.18	.38	.25	.42	-8.36***
Education, culture, and public health	.13	.33	.17	.36	-5.62***
Party and government agencies ^{c, d}	.14	.34	.09	.29	6.69***
Family structure					
Marital status (married = 1) ^{c, d}	.88	.36	.89	.34	-1.72
Child younger than 5 ^{c, d}	.13	.34	.14	.35	-1.21
Grandchild younger than 5	.03	.16	.02	.15	.71
N	6,237		5,569		

^a t-value indicates the t-test for $H_0: \text{Value}_m - \text{Value}_f = 0$.

^b t-value indicates the t-test for $H_0: \text{Gap}_{1995} - \text{Gap}_{1988} = 0$ where $\text{Gap}_{1995} = \text{Value}_{m,1995} - \text{Value}_{f,1995}$ and $\text{Gap}_{1988} = \text{Value}_{m,1988} - \text{Value}_{f,1988}$.

^c Change between 1988 and 1995 for men is significant at $p < .05$.

^d Change between 1988 and 1995 for women is significant at $p < .05$.

* $p < .05$ ** $p < .01$ *** $p < .001$

The gender gap by employment status¹¹ also shows remarkable stability between 1988 and 1995. Among permanent workers and workers on long-term contracts, women's earnings range from 83.6% to 85.4% of men's earnings in both 1988 and 1995, respectively, indicating that labor reform has had a minimum impact on gender disparities in earnings. There is, however, a decrease in gender gap in earnings among short-term contract workers and people who work for private businesses, although this change is not statistically significant because of the small number of workers surveyed in these categories.

Gender Differences in Determinants of Earnings in 1988 and 1995

Table 2 shows that there is a consistent gender difference in human capital, political capital, and placement in the labor force in both 1988 and 1995.¹² In both years, women had less education, had fewer years of seniority, were less likely to be Communist party members or in the state sector, and were more likely to be employed in the collective sector. Furthermore, women were also less likely to be cadres and managers in state agencies and enterprises, to work in the mining, construction, and transportation industry, or to work in party and government agencies. They were more likely to be workers or to work in service and education. This pattern holds for both 1988 and 1995. No gender difference was found in family structure in either 1988 or 1995 — the proportions of those who were married, have a child younger than 5, and have a grandchild younger than 5 were similar for both men and women.

The amount of gender gap in these characteristics has also changed. Gender disparity in education decreased over time as a result of a large increase in women's education. But the gender gap in seniority increased substantially over time from a large decline in women's seniority, indicating that more women than men were shut off from wage advancement beyond middle age as a result of layoffs and early retirement in 1995.¹³ The gender gap in Communist party membership has slightly declined.

As for the gender gap in work-sector placement, more women are able to make inroads into the state sector now that the state sector is losing its relative advantage over the new sector. Occupational distribution has also shifted, with an increase in the proportion of people employed in high-paying occupations and a decrease in the proportion of people employed in low-paying occupations. This shift manifests itself in a substantial decline in the number of workers and male office workers and a rise in the number of male cadres and managers and female office workers. Now that cadres and managers of state organizations and professional and technical workers emerged as the occupations with top pay, the proportion of people in both occupations has increased. The increase in cadres and managers is larger for men than for women, further widening the gender gap in this occupation. As the pay to office workers declined, the proportion of women in this occupation grew and now

TABLE 3: Direct Effects of Gender on Earnings — 1988 and 1995 Chinese Household Income Project

		Gender Effect ^a	1988 t-value	Model R ²
Model A:	Gender (Female = 1)	-.18	-26.00***	.04
Model B:	Gender, human capital	-.12	-20.08***	.26
Model C:	Gender, human capital, political capital	-.11	-17.92***	.26
Model D:	Gender, human capital, political capital, occupation, sector, industry	-.10	-15.91***	.27
Model E:	Gender, human capital, political capital, occupation, sector, industry, and family structure	-.10	-16.67***	.28

		Gender Effect ^a	1995 t-value	Model R ²
Model A:	Gender (Female = 1)	-.20	-16.41***	.02
Model B:	Gender, human capital	-.12	-10.64***	.17
Model C:	Gender, human capital, political capital	-.11	-9.43***	.18
Model D:	Gender, human capital, political capital, occupation, sector, industry	-.10	-8.98***	.21
Model E:	Gender, human capital, political capital, occupation, sector, industry, and family structure	-.10	-9.02***	.21

^a Interactions between gender and other variables are not estimated in these models. Only the linear additive effects of gender are estimated.

* p < .05 ** p < .01 *** p < .001

surpasses that of men. Industry placement between 1988 and 1995 also shows a growth in gender gap as men move away from mining, construction, and transportation and into manufacturing at a much faster pace than women. There is also a slight decline in gender gap in the proportion of people employed in party and government agencies.

Effects of Determinants of Earnings in 1988 and 1995

To estimate the effects of gender on earnings, we use a series of five nested regression models with the natural logarithm of earnings as the dependent variable. The proportions of variance in earnings accounted for by these five models are reported in Table 3. Model A considers the effect of gender alone.¹⁴ Additional variables are added in each subsequent model. In Model B, when we control for human capital, the estimated direct effect of gender on earnings

TABLE 4: Coefficients from the Regression of Ln(earnings) on Gender, Human Capital, Political Capital, Family Structure, Sector, Occupation, and Industry — 1988 Chinese Household Income Project

	Separate Models by Year and Gender							
	1988				1995			
	Men Coef.	t-value	Women Coef.	t-value	Men Coef.	t-value	Women Coef.	t-value
Human capital								
Education (x 10 ⁻²)	.49	3.26***	1.74	9.38***	2.37	8.11***	2.90	8.20***
Seniority	.03	19.92***	.03	13.47***	.04	12.92***	.07	14.44***
Seniority2 (x 10 ⁻³)	-.54	-14.32***	-.60	-10.76***	-.65	-8.94***	-1.24	-10.60***
Political capital								
Communist party member	.03	3.47***	.09	6.03***	.06	3.97***	.10	3.94***
Sector								
State	-.06	-1.49	.22	5.47***	-.21	-4.34***	-.34	-6.43***
Collective	-.13	-3.17***	.07	1.85	-.41	-7.73***	-.53	-9.51***
New sector	— ^a	—	—	—	—	—	—	—
Occupation								
Owners and operators of private businesses	.10	2.39*	.10	1.92	-.22	-3.33***	-.37	-4.59***
Professionals and technical workers	—	—	—	—	—	—	—	—
Cadres and managers of state organizations	.03	1.99*	.01	.28	.00	.06	.02	.37
Office workers	-.03	-2.51*	-.03	-1.52	-.07	-2.84**	-.09	-3.18***
Workers	-.05	-3.43***	-.07	-3.90***	-.11	-4.67***	-.21	-7.89***
Industry								
Manufacturing	—	—	—	—	—	—	—	—
Mining, construction, and transportation	.06	5.27***	-.01	-.83	.06	2.52*	.06	1.79
Commerce, real estate, finance, and service	.02	1.77	-.01	-.55	-.01	-.24	-.02	-1.02
Education, culture, and public health	-.04	-3.11**	-.05	-3.23***	.06	2.56*	.09	3.25***
Party and government agencies	-.07	-5.16***	-.08	-3.29***	-.00	-.19	.03	.97
Family structure								
Marital status (married=1)	.17	8.92***	.21	9.29***	.05	1.70	-.03	-1.04***
Presence of child < 5	.04	2.81**	-.02	-1.46	.01	.49	-.01	-.29
Presence of grandchild < 5	1.03	1.06	-.05	-1.62	-.18	-3.46***	-.14	-2.20*
Constant	7.03	147.37***	6.63	134.56***	8.04	114.48***	7.96	104.00***
R ²	.31		.23		.18		.20	
N	8,997		8,147		5,916		5,231	

^a Omitted category. These categories were chosen as the omitted categories because the gender differences in these categories were the minimum.

* p < .05 ** p < .01 *** p < .001

TABLE 4: Coefficients from the Regression of Ln (earnings) on Gender, Human Capital, Political Capital, Family Structure, Sector, Occupation, and Industry — 1995 Chinese Household Income Project (Cont'd)

	Main Effects		Pooled Model ^b					
			Year ^c		Interaction Effects Gender ^d		Year	Gender ^e
Human capital								
Education (x 10 ⁻²)	.49	3.26***	1.88	5.98***	1.26	4.32***	-.73	-1.54
Seniority	.03	19.92***	.04	2.60**	-.01	-1.63	.03	4.81***
Seniority2 (x 10 ⁻³)	-.54	-14.32***	-.11	-1.37	-.00	-.73	-.05	-3.92
Political capital								
Communist party member	.03	3.47***	.03	1.49	.06	2.66**	-.02	-.58
Sector								
State	-.06	-1.49	-.16	-2.34*	.28	3.99**	-.40	-4.40***
Collective	-.13	-3.17***	-.29	-4.07***	.21	2.90**	-.32	-3.35***
New sector	— ^a	—	—	—	—	—	—	—
Occupation								
Owners and operators of private businesses	.10	2.39*	-.32	-4.15***	-.00	-.00	-.15	-1.28
Professionals and technical workers	—	—	—	—	—	—	—	—
Cadres and managers of state organizations	.03	1.99*	-.03	-1.04	-.02	-.50	.04	.61
Office workers	-.03	-2.51*	-.03	-1.24	.01	.36	-.03	-.67
Workers	-.05	-3.43***	-.07	-2.05*	-.02	-.60	-.08	-2.12*
Industry								
Manufacturing	—	—	—	—	—	—	—	—
Mining, construction, and transportation	.06	5.27***	.01	.95	-.07	-3.12**	.07	1.67
Commerce, real estate, finance, and service	.02	1.77	-.03	-1.11	-.03	-1.34	.01	.32
Education, culture, and public health	-.04	-3.11**	.11	3.85***	-.01	-.32	.03	.85
Party and government agencies	-.07	-5.16***	.07	2.47*	-.00	-.06	.04	.84
Family structure								
Marital status (married = 1)	.17	8.92***	-.12	-3.52***	.04	1.08	-.12	-2.41*
Presence of child < 5	.04	2.81**	-.02	-.86	-.06	-2.41*	.05	1.36
Presence of grandchild < 5	.03	1.06	-.21	-3.82***	-.07	-1.59	.12	1.44
Constant	7.03	147.37***	1.01	114.62***	-.40	-4.78***	.32	11.90***
R ² = .63								
N = 28,291								

^b Results are based on a pooled regression of ln(earnings) on the listed determinants of earnings and three sets of interaction terms: (1) two-way interactions between gender (female = 1) and the determinants, (2) a two-way interactions between year (1995 = 1) and the determinants, and (3) three-way interactions between gender, year, and the determinants.

^c Two-way interaction between year (1995 = 1) and the determinants.

^d Two-way interaction between gender (female = 1) and the determinants.

^e Three-way interaction between gender (female = 1), year (1995 = 1), and determinants.

declines from $-.18$ to $-.12$ in 1988, and from $-.20$ to $-.12$ in 1995. Thus, 33% ($[-.18+.12]/-.18$) of the overall effect of gender on earnings is attributable to the effect of gender on human capital in 1988, and 40% ($[-.20+.12]/-.20$) in 1995, indicating an increase in the effect of human capital over time.

In models C, D, and E, additional variables measuring political capital, labor-force placement, and family structure are added. Including these additional variables in the model does not significantly reduce the effect of gender on earnings. Model E explains 29% of the variance in earnings in 1988 and 21% of the variance in earnings in 1995, indicating that of the overall effect of gender on earnings in 1988, 44% ($[-.18+.10]/.18$) is attributable to the effect of gender on human capital, political capital, family structure, and labor-force placement, and 50% ($[-.20+.10]/.20$) is attributable in 1995.

The results in Table 4 indicate that all the measures of human capital we examined have statistically significant positive effects on both men and women's earnings in both 1988 and 1995. In both years, for each additional year of education, the monetary return is higher for women than men, and this return increased over time for both men and women. In 1988, men's wages increase by approximately .5% for each additional year of education, while women's wages increase by approximately 1.7%. In 1995, these numbers are 2.4% and 2.9%, respectively.

For most workers, although seniority has a positive relationship with earnings throughout their careers, this positive return peaks and then starts to yield diminishing return. This positive return to seniority persists longer for men than for women and longer in 1995 than in 1988. In 1988, the return from seniority peaks at 28 years for men with a 42% increase and at 25 years for women with a 30% increase. In 1995, this curve peaks at 30 years for men with a 62% increase and at 28 years for women with a 99% increase.

Communist party membership also significantly increased both men's and women's earnings in 1988 (3% and 9%) and 1995 (6% and 10%). This positive effect of Communist party membership is larger for women in both years, but there is no indication that this positive effect increased over time or that this gender gap changed over time.

The effect of economic sector changed between 1988 and 1995, and this change varies by gender. In 1988, men in the collective sector earned 13% less than men in the state and private sector, while women in the state sector earned 22% more than women in both the collective and new sector. The earnings of men but not women in the new sector are on par with the earnings of men in the state sector. In 1995, the earnings of both men and women in the new sector surpassed the state sector by 22% for men and 34% for women, and surpassed the collective sector by 42% for men and 53% for women. This drastic increase in return to the new sector indicates an increased return to individuals directly engaged in market-related activities. Those in the state and collective sectors

experienced a decrease in earnings between 1988 and 1995, which was larger for women than for men.¹⁵

Despite some change in return to occupations between the two years, we found no gender difference in this effect and little gender-related change. In 1988, owners and operators of private businesses enjoyed the highest earnings, while workers and office workers had the lowest earnings. In 1995, the return to owners and operators of private businesses declined substantially. In addition, the earnings gap between workers and other occupations widened, and this negative change was larger for women than men.

Although substantial changes in return to industry placement occurred between 1988 and 1995, these changes did not result in gender-related change. In 1995, education, culture, public health, and party and government agencies emerged as the industries with top pay for both genders. For men, the mining, construction, and transportation industry was also high paying in both years.

The effect of family structure on earnings also changed between 1988 and 1995. There has been a decline in return to marriage, and this negative change was larger for women than for men. Married women experienced a decline in earnings, and married men no longer enjoyed a positive return to earnings. The effect of parenthood on men's earnings also changed, with fathers no longer enjoying a positive return to earnings. A negative effect of grandparenthood also emerged in 1995. The presence of a grandchild under age 5 negatively affected both men and women's earnings. These changes can be seen as evidence that market competition is driving firms to treat married women and grandparents as less competent workers. In 1995, fathers are no longer regarded as better workers.

Sources of Gender Gap in Earnings in 1988 and 1995

We decompose the gender gap in earnings using means of the determinants of earnings and the effects of these determinants (Aldrich & Buchele 1986; England 1992; Jones & Kelley 1984; Marini & Fan 1997). The gender gap in earnings is expressed as the sum of two components: the proportion in gender gap in earnings attributable to gender differences in the means of the explanatory variables and a residual (unexplained) component. These decompositions can be expressed as the following two equations:

$$\ln W_m - \ln W_f = B_m X_m - B_f X_f = B_f (X_m - X_f) + \text{Residual} \quad (1a)$$

$$\ln W_m - \ln W_f = B_m X_m - B_f X_f = B_m (X_m - X_f) + \text{Residual} \quad (1b)$$

where $\ln W$ is the mean of the natural logarithm of the annual earnings, X is a vector of means of the explanatory variables in the estimated multiple regression equation, and B is a vector of coefficient for the explanatory variables in the estimated equation. The subscript m represents males and f represents

TABLE 5: Contributions of Gender Differences on Independent Variables to the Gender Gap in Earnings — 1988 and 1995 Chinese Household Income Project

	1988			
	Men's Coef. ^a	Women's Coef. ^b	Average	Percent Based on Average
Total gender difference in ln (earnings) explained by levels on independent variables	.038	.068	.053	30.7
Human capital	.017	.024	.021	11.9
Education	.005	.016	.011	6.2
Seniority	.012	.008	.010	5.7
Political capital	.007	.020	.013	7.5
Labor-force placement	.016	.026	.022	12.4
Sector	.009	.020	.015	9.1
Occupation	.008	.009	.009	4.5
Industry	.000	-.003	-.002	-1.1
Family structure	-.002	-.002	-.002	-1.1
Unexplained gender difference in ln (earnings)	.137	.108	.122	69.3
Total gender differences in ln (earnings) ^c	.176	.176	.176	100.0
1995				
	Men's Coef. ^a	Women's Coef. ^b	Average	Percent Based on Average
Total gender difference in ln (earnings) explained by levels on independent variables	.098	.110	.103	58.2
Human capital	.061	.054	.057	32.2
Education	.016	.019	.017	9.6
Seniority	.045	.035	.040	22.6
Political capital	.011	.019	.015	8.5
Labor-force placement	.028	.038	.033	18.7
Sector	.018	.017	.017	9.6
Occupation	.010	.020	.015	8.5
Industry	.000	.001	.001	.6
Family structure	-.002	-.001	-.002	-1.1
Unexplained gender difference in ln (earnings)	.078	.065	.074	41.8
Total gender differences in ln (earnings) ^c	.177	.177	.177	100.0

^a Based on $B_m(X_m - X_f)$, the product of the men's coefficients and the corresponding gender gap in the determinants.

^b Based on $B_f(X_m - X_f)$, the product of the women's coefficients and the corresponding gender gap in the determinants.

^c Based on $\ln W_m - \ln W_f$ the gap in log earnings.

females. The residual¹⁶ terms are called wage discrimination by economists, indicating the proportion of earnings difference not explained by gender differences in the *Xs*. We partition the earnings gap using both regression coefficients for women and men because either coefficient can be used as the standard for estimation. We summarize the results of these two decompositions by taking the average of the male and female estimates.

We use this approach to examine the effects of gender differences in worker characteristics and the effects of segregation in labor-force placement. The results are presented in Table 5. On average, the proportion of gender gap explained by differences in the means of these variables rose from 30.7% in 1988 to 58.2% in 1995 mainly as a result of the rising effect of human capital. The proportion of gender gap in earnings accounted for by education rose from 6.2% to 9.6%, and that by seniority rose from 5.7% in 1988 to 22.6% in 1995. Gender gap in Communist party membership remains an important determinant of gender gap in earnings, explaining 7.5% of gender gap in earnings in 1988 and 8.5% in 1995. Gender segregation in the labor force explains 12.4% of gender gap in earnings in 1988 and 18.7% in 1995, with sector being the most important factor in both years and occupation having the largest amount of increase. This very low share of gender-related labor force segregation in explaining gender gap in earnings is partly due to the small number of occupational and industrial categories used in the estimation. Gender differences in family structure account for virtually none of the gap.

Our analysis implies that at least some of the increase between 1988 and 1995 can be attributed to the increasing significance of human capital and occupational placement in determining the earnings disparity between the genders. This rising significance of human capital and occupation indicates that China is experiencing a trend toward a pattern of gender gap in earnings similar to that in capitalist countries, where occupational segregation and human capital are the two major factors behind discrimination in determining gender gap in earnings.¹⁷

INTERCITY VARIATIONS IN 1995

The trend analysis in the previous section assumes marketization progresses with time. In this section, we measure and analyze between-city variation in level of marketization and its impacts on determinants of gender gap in earnings in the 1995 data. We first construct an index of marketization and then use this index to examine the relationship between marketization and gender gap in earnings in 1995. This cross-sectional comparison will shed further light on how gender relations in the labor force change in response to marketization.

**TABLE 6: Direct Effects of Gender on Earnings by Degree of Marketization
— 1995 Chinese Household Income Project**

	Least Marketized Cities			Low Marketized Cities		
	Gender Effect	t-value	Model R ²	Gender Effect	t-value	Model R ²
Model A: Gender (female = 1)	-.20	-10.78***	.03	-.18	-9.36***	.02
Model B: Gender, human capital	-.14	-7.62***	.22	-.11	-6.23***	.17
Model C: Gender, human capital, political capital	-.13	-7.11***	.22	-.10	-5.46***	.18
Model D: Gender, human capital, political capital, occupation, sector, industry	-.12	-6.80***	.24	-.09	-4.96***	.23
Model E: Gender, human capital, political capital, occupation, sector, industry, and family structure	-.11	-6.80***	.25	-.09	-5.09***	.23
	(N of cities = 16) (N = 3,784)			(N of cities = 20) (N = 3,840)		
	Marketized Cities			Most Marketized Cities		
	Gender Effect	t-value	Model R ²	Gender Effect	t-value	Model R ²
Model A: Gender (female = 1)	-.18	-4.29***	.02	-.20	-5.17***	.02
Model B: Gender, human capital	-.11	-2.08*	.17	-.11	-3.18*	.17
Model C: Gender, human capital, political capital	-.10	-2.50*	.18	-.10	-2.52*	.19
Model D: Gender, human capital, political capital, occupation, sector, industry	-.09	-2.41*	.21	-.10	-2.54*	.25
Model E: Gender, human capital, political capital, occupation, sector, industry, and family structure	-.09	-2.73*	.21	-.10	-2.52*	.26
	(N of cities = 8) (N = 1,183)			(N of cities = 11) (N = 1,146)		

^a Interactions between gender and other variables are not estimated in these models. Only the linear additive effects of gender are estimated.

* $p < .05$ ** $p < .01$ *** $p < .001$

Measuring Marketization in 1995

In order to differentiate cities on their degree of maturity in the process of marketization, we construct an index of marketization. Our measurement model contains a latent construct, marketization, measured by multiple indicators:

$$x = \Lambda_x \xi + \delta \quad (2.0)$$

where x is a vector of three observed indicators, ξ is the latent construct marketization, Λ_x is a vector of three parameters linking the latent construct to the observed indicators, and δ is a vector of error terms. Each indicator, δ , is assumed to be a function of the latent construct and an error term that is independent of the latent construct. These three indicators each measure the degree of marketization in the commodity market, labor market, and capital market. We estimated this model using LISREL VIII (Jöreskog and Sörbom 1988, 1993). The fit statistics for this one-factor model ($\chi^2 = .9$, $df = 1$, $GFI = 1.00$, $RMR = .031$, and $BIC = -1.32$) indicate that it fits the data well. Factor loadings generated from this analysis were used to construct an index of marketization.

We then inspected the frequency distribution of city along this latent construct of marketization. This distribution is highly right-skewed, with the majority of cities having a low score on degree of marketization. Because our interest is not on the intercity variation in marketization per se, but on the relationship between marketization and gender gap in earnings, we differentiate cities into four categories on the basis of their scores on this index of marketization. Sixteen cities had a Z-score of less than $-.5$ and are the least marketized cities; they contain 38% of the respondents. Twenty cities had a Z-score between $-.5$ and 0 and are the low marketization cities; 38% of the respondents are in this category. Eight cities with 12% of the respondents had a Z-score between 0 and $.5$ and are marketized cities. The last category, the most marketized cities, are those with a Z-score above $.5$ and represent eleven cities with 12% of the respondents.

Marketization and the Gender Effect on Earnings in 1995

To estimate the differing effects of gender on earnings by degree of marketization, we again use a series of five nested regression models using the natural logarithm of earnings as the dependent variables. The proportions of variance in earnings accounted for by these five models for each group of cities are reported in Table 6. Model A indicates the gender effect alone. In model B, when we control for human capital, the estimated direct effect of gender on earnings declines: 30.0% in the least marketized cities, 38.9% in the low marketization cities, 38.9% in the marketized cities, and 45.0% in the most

TABLE 7: Contributions of Gender Differences on Independent Variables to the Gender Gap in Earnings by Degree of Marketization — 1995 Chinese Household Income Project

	Men's Coef. ^a	Women's Coef. ^b	Average	Percent Based on Average
Least marketized cities				
Total gender difference in ln (earnings) explained by levels on independent variables	.084	.091	.088	42.5
Human capital	.062	.054	.058	28.0
Education	.015	.021	.018	8.7
Seniority	.047	.033	.040	19.3
Political capital	.010	.016	.013	6.3
Labor-force placement	.012	.022	.017	8.2
Sector	.015	.016	.015	7.3
Occupation	.002	.007	.004	1.9
Industry	-.005	.000	-.002	-1.0
Family structure	.000	-.001	.000	0.0
Unexplained gender difference in ln (earnings)	.123	.116	.119	57.5
Total gender Differences in ln (earnings) ^c	.207	.207	.207	100.0
(N of cities = 16; N of males = 2,030; N of females = 1,754)				
Low marketized cities				
Total gender difference in ln (earnings) explained by levels on independent variables	.092	.072	.082	43.9
Human capital	.044	.019	.031	16.6
Education	.008	.011	.009	4.8
Seniority	.036	.008	.022	11.8
Political capital	.011	.017	.014	7.5
Labor-force placement	.039	.037	.038	20.3
Sector	.025	.025	.025	13.4
Occupation	.014	.009	.011	5.9
Industry	.000	.003	.002	1.1
Family structure	-.002	-.001	-.001	-.5
Unexplained gender Difference in ln (earnings)	.095	.115	.105	56.1
Total gender Differences in ln (earnings) ^c	.187	.187	.187	100.0
(N of cities = 20; N of males = 2,013; N of females = 1,827)				

TABLE 7: Contributions of Gender Differences on Independent Variables to the Gender Gap in Earnings by Degree of Marketization — 1995 Chinese Household Income Project (Cont'd)

	Men's Coef. ^a	Women's Coef. ^b	Average	Percent Based on Average
Marketized cities				
Total gender difference in ln (earnings) explained by levels on independent variables	.086	.091	.089	49.2
Human capital	.040	.032	.036	19.9
Education	.002	.014	.008	4.4
Seniority	.038	.018	.028	15.5
Political capital	.007	.021	.014	7.7
Labor-force placement	.040	.039	.040	22.1
Sector	.034	.010	.022	12.2
Occupation	.010	.026	.018	9.9
Industry	-.004	.003	.000	0.0
Family structure	-.001	-.001	-.001	-.6
Unexplained gender Difference in Ln (earnings)	.095	.090	.092	50.9
Total gender Difference in Ln (earnings) ^c (N of cities = 8; N of males = 612; and N of females = 571)	.181	.181	.181	100.0
Most marketized cities				
Total gender difference in Ln (earnings) explained by levels on independent variables	.104	.116	.110	54.5
Human capital	.063	.057	.060	22.3
Education	.045	.049	.047	15.8
Seniority	.018	.008	.013	6.4
Political capital	.002	.006	.004	2.0
Labor-force placement	.064	.064	.064	31.7
Sector	.009	.001	.005	2.5
Occupation	.036	.054	.025	22.3
Industry	.019	.009	.014	6.9
Family structure	-.002	-.003	-.003	-1.5
Unexplained gender difference in Ln (earnings)	.098	.086	.092	45.5
Total gender Differences in Ln (earnings) ^c (N of cities = 11; N of males = 620; and N of females = 526)	.202	.202	.202	100.0

^a Based on $B_m(X_m - X_f)$, the product of the men's coefficients and the corresponding gender gap in the determinants.

^b Based on $B_f(X_m - X_f)$, the product of the women's coefficients and the corresponding gender gap in the determinants.

^c Based on $\ln W_m - \ln W_f$, the gap in log earnings.

marketized cities are attributable to the effect of gender on human capital. In the most marketized cities, close to half of the negative effect of gender on earnings is due to women's lower human capital.

In models C, D, and E we add variables measuring political capital, placement in occupational, sector, industry, and family structure. These models explain 20% to 27% of the variance in earnings. Of the overall effect of gender on earnings, about half is attributable to gender disparities in human capital, political capital, labor-force placement, and family structure.

Marketization and Changing Sources of Gender Gap in Earnings in 1995

We again decompose the gender gap in earnings based on equations 1a and 1b for 1995 and do so for each category of cities separately to identify the relationship between the sources of gender gap in earnings and marketization. We use this approach to examine the effects of gender differences in worker characteristics and in sector, occupation, and industry placement. The results are presented in Table 7.

The most marketized cities have the highest proportion of gender gap in earnings attributable to the determinant of earnings. Differences in the means of these variables account for 54.5% of the gender gap in wages in the most marketized cities, and this percentage ranges from 42.5% to 49.2% in the other, less marketized, cities. Significant change has taken place in the most marketized cities with regard to gender gap earnings. As a result, a substantial change occurred in the proportion of gender gap in earnings accounted for by gender differences in worker characteristics and labor-force placement in the most marketized cities. This change is limited to the cities at the high end of the distribution; little change occurred in less marketized cities.

In these most marketized cities, education emerges as the most important contributor of gender gap in earnings, explaining 15.8% of the gender gap in wages comparing to less than 8.7% in less marketized cities. However, the proportion of gender gap in earnings attributable to seniority is much lower in the most marketized cities than in other cities, ranging between 11.8% and 19.3% in less marketized cities but only 6.4% in the most marketized cities. One explanation is that a high degree of marketization produces decoupling of seniority and productivity. Wages rise with seniority and job tenure regardless of productivity in a planned economy; the connection between wages and seniority has been substantially weakened in the most marketized cities. Furthermore, most of these highly marketized cities are located in the coastal region with much higher pay scales and a living standard, which tend to draw young people with less seniority. In addition, businesses in these cities generally are newer firms, and senior workers do not necessarily have the skills and knowledge essential to the productivity of these newer firms. Thus the

monetary return to each additional years of seniority is lowest in these most marketized cities.

Another important change with marketization is the declining significance of political capital in explaining gender gap in earnings. Gender gap in Communist party membership accounts for only 2.0% of the gender disparity in earnings in the most marketized cities, down from 6.3% to 7.7% in less marketized cities.

Occupation rises to become the second-largest factor of gender gap in earnings in the most marketized cities, accounting for 22.3% of the gap, and this ranges from 2.0% to 9.9% in the other cities. The importance of industry placement also increased to explain 6.9% of the gender gap in earnings compared with virtually none of the gender gap in the less marketized cities. On the other hand, sector affiliation declined in importance in explaining gender gap in earnings. In the less marketized cities, 7.3% to 13.4% of the gender gap in earnings is due to gender differences in sector placement. This percentage declined to only 2.5% in the most marketized cities, indicating the declining significance of sector affiliation, particularly with the state sector.

Overall, multiple meaningful changes have occurred in the most marketized cities. For instance, education has surpassed seniority to become one of the three most important sources of gender gap in earnings, while the significance of Communist party membership has slightly declined. Occupational and industry segregation also rise in significance in explaining gender gap in earnings, while the significance of sector placement declined. These changes indicate that marketization is pushing these most marketized cities to resemble capitalist societies in gender-gap patterns in earnings, where wage discrimination, occupational and industrial segregation, and human capital are the top three explanations for gender gap in earnings (Marini & Fan 1997). These changes can be seen as a result of the transition in the process of wage determination in the most marketized cities. Communist party membership and affiliation with the state sector — indicators of positional power and resources in a redistributive economy — have been replaced by education and occupation and industry placement — symbols of human capital and market power.

Summary and Conclusions

Our analysis found both stability and change in the process of gender-related wage determination with marketization. Despite substantial marketization, the amount of gender gap in earnings has been well preserved over time and across cities of various degree of marketization. Beneath this stability, we found changing sources of gender wage differentials. There has been a small aggregate

change, and a substantial change in the most marketized cities. These changes indicate that marketization has increased the significance of human capital and occupational placement over time and that the major sources of gender gap in earnings have shifted from redistributive economy-based mechanisms to market-based mechanisms in the most marketized cities. This change is disproportional, occurring largely in the most marketized cities, indicating a nonlinear, accumulative marketization process.

A PERSISTENT GENDER GAP IN EARNINGS

We found a persistent gender gap in earnings in urban China. Perhaps we should not be surprised. In Russia, another postsocialist country, Gerber and Hout (1998) found that women's average wage was 63% of men's in 1993, fell to 53% in 1994, but recovered to 65% in 1995. Gender gap in earnings in China remains remarkably stable between 1988 — when women make 83.9% of men's earning — and 1995 — when women make 83.8% of men's earnings. This gender gap in earnings persists even after holding constant the effects of human capital, political capital, labor-force placement, and family structure. After controlling for these effects, women make about 10% less than men do in both 1988 and 1995. This negative gender effect also remains constant over time after controlling for the effects of education, labor cohort, and employment status, which is consistent with previous findings. Further analysis of the 1995 data indicates that cities with different degrees of marketization have almost the same amount of gender gap in earnings. This gender gap in earnings persists after controlling for the effects of human capital, political capital, labor-force placement, and family structure.

The fundamental basis for this persistent gender gap in earnings is a consistent gender difference in human capital, political capital, and labor-force placement that remains largely unchanged over the years. Women had less education, had fewer years of seniority, were less likely to be Communist party members, less likely to be in the state sector, and were more likely to be employed in the collective sector. Women were also less likely to be cadres and managers in state agencies and enterprises; to work in the mining, construction, and transportation industry; and to work in party and government agencies. Moreover, women were more likely to be workers and to work in service and education.

The persistence of gender gap in earnings is largely due to slow change in both the organizational structures and the belief system and to the persistent barriers to the free market operations during most of the period between 1988 and 1995 in most cities. Prior evidence is consistent with this finding. In state institutions and firms much of the old personnel practices and policies were well preserved into the early 1990s; only the new workers in the state sector

were subject to a system of contract employment (Naughton 1995). Government officials continue to intervene and redistribute wages. As a result, the wage system has "become enmeshed in bargaining with government officials" (Naughton 1995:209). This is consistent with the recognition that emerging economic institutions are constrained and intertwined with existing political, economic, and social institutions (Bian & Logan 1996; Bian & Zhang 2002; Davis 1990; Naughton 1995; Oi 1992; Parish & Michelson 1996; Rona-Tas 1994; Shirk 1993; Stark 1996; Walder 1995, 1996; Zhou 2000).

The persistence of the gender gap in earnings also indicates that marketization is not intrinsically equalizing. In theory the market fosters efficiency and productivity and the competition imperative of the market makes discrimination based on nonproductivity-related traits irrational, but market forces do not necessarily eliminate the practice of discrimination and its numerous mechanisms of self-maintenance, including gender-based occupational segregation, sex-typed career orientations, and institutional and attitudinal biases.

CHANGING SOURCES OF GENDER GAP IN EARNINGS

We also found that marketization is shifting the sources of the gender gap in earnings largely through the changing returns to human capital, political capital, and labor-force placement. As a result, the relative significance of these determinants has changed. Between 1988 and 1995, the amount of the gender gap in earnings accounted for jointly by gender difference in the means of worker human capital, political capital, labor-force placement, and family structure increased. In particular, measures of human capital and occupational placement explain a larger proportion of gender gap in earnings in 1995 than in 1988. More important, the most significant change occurred in the most marketized cities. In these cities, marketization increased the proportion of the gender gap in earnings explained by the gender gap in market-related characteristics such as education and occupation and industry placement, and marketization reduced the contribution of redistributive economy-related characteristics such as affiliation with the state sector, Communist party membership, and seniority.

This nonlinear pattern of change in the sources of gender gap in earnings is consistent with the market transition theory's recent prediction that market-based mechanism in social stratification will become dominant only with the highest degree of market maturity (Nee & Cao 2002). Despite a persistent gender-based power relationship, market transition has exerted weak and delayed effects on returns to human capital, political capital, and labor-force placement, shifting the relative significance of the different sources of gender wage differential in the most marketized cities.

These changes in the mechanism of wage determinations in the most marketized cities is moving these most marketized Chinese cities toward similar patterns of gendered wage differential found in capitalist societies (Brinton 1988, 1993; England 1992; England et al. 1988; Marini 1989; Marini & Fan 1997). In addition to wage discrimination, occupational segregation and differential human capital development become major sources of a gender gap in earnings. This finding indicates that although different economic systems use different mechanisms to sustain gender wage differentials, the size of this gap can remain unchanged.

In summary, our analysis contributes to sociologists' and economists' great interest in the relationship between the market and wage differentials by examining the relationship between the Chinese marketization and gender-based wage differentials. Our analysis gives no indication that marketization has changed the amount of the gender gap in earnings. It also shows that to the extent marketization shifts the sources of gender gap in earnings, this shift is disproportional, only occurring in the most marketized cities. This market-oriented transformation has sustained the existing gender gap in earnings. In less marketized cities, little change has occurred in either the actual amount or the source of the gender gap in earnings.

Notes

1. Research from the U.S. indicates that marriage is positively associated with men's earnings but negatively associated with women's earnings (Korenman & Neumark 1992a) and that the presence and number of children in the home reduces women's earnings but increases men's earnings (Cramer 1980; Korenman & Neumark 1992b). This family-related source of gender gap in earnings is not confined to capitalist countries. Several researchers have documented that Chinese working women, too, do the bulk of household work, are usually responsible for household management, and constantly perform child-care duties (Short et al. 2001, 2002; Stacey 1983; Whyte 1984; Wolf 1985; Zuo & Bian 2001).
2. Because wage discrimination is estimated as the residual gender gap in earnings unaccounted for by gender differences in productivity-related characteristics, complete measures of productivity-related characteristics are required to achieve an accurate estimation of wage discrimination. Our data do not afford the means to do so.
3. Wage discrimination is only one of multiple ways in which discrimination contributes to gender gap in earnings. Discrimination in the family, in the educational system, and at the workplace produces part of women's lower productivity-related characteristics. It is impossible to quantify this more elusive form of discrimination.
4. When estimating wage discrimination, the proportion of gender gap in earnings attributable to productivity-related characteristics is first estimated. The residual gender gap in earnings unaccounted for is then treated as resulting from wage discrimination. Empirical research from the U.S. shows extensive wage discrimination: at least half of

the gender gap in earnings remains after productivity-related variables are included in the estimation models (Marini & Fan 1997; Mincer & Polachek 1974, 1978).

5. We thank G. William Skinner for suggesting that we examine the sampled cities in the context of a multilevel spatial model of hierarchical regional space, a ranking of cities based on the levels of their socioeconomic development. Eight urban hierarchical levels were identified by Skinner (Skinner, Henderson & Yuan 2000) using detailed socioeconomic data from a 1% household sample from China's 1990 population census. Both the 1988 and 1995 CHIP samples, excluding the county headquarters, contains cities at the top five levels in the central-place hierarchy. In the 1988 CHIP sample, 4 of 10 apex metropolises and 6 of 20 central metropolises were included in our sample. However, only 23 of 225 greater cities and 2 of 768 local cities were included, indicating that these lower-level cities are underrepresented in the city sample. As a result, residents of central cities, regional cities, and greater cities are overrepresented and residents of local cities are underrepresented. The distribution of individuals in the nonagricultural labor force shares a similar pattern — the 1988 CHIP sample underrepresents workers of local cities in the Chinese urban labor force.

6. We again examined these cities in the multilevel spatial model of Hierarchical Regional Space, (Skinner 1994; Skinner, Henderson & Yuan 2000). The 1995 sample has substantially improved over the 1988 sample. In the 1995 CHIP sample, 5 of 10 apex metropolises and 6 of 20 central metropolises were included in our sample. However, only 16 of 225 greater cities and 11 of 768 local cities were included, indicating that these lower-level cities are underrepresented in the city sample. The distribution of city residents across the central-place hierarchy is more consistent with the national distribution, with residents of regional cities and of greater cities slightly overrepresented, and residents of local cities slightly underrepresented. Similarly, the distribution of individuals in the nonagricultural labor force is also very similar to the national statistics, with individuals of regional cities and of greater cities slightly overrepresented and individuals of local cities slightly underrepresented. Thus the 1995 CHIP sample is fairly representative of the Chinese urban labor force (Shu & Bian 2002: Table 1).

7. Thanks to a reviewer's suggestion, we tested this assumption by randomly selecting only one individual from each household. We selected four such samples. In both 1988 and 1995 CHIP data, we found no statistical difference between our sample and four of these five samples on all the variables we used in our models. In the remaining one sample, the respondents have longer seniority, more are CCP members, and more are married. There are wide variations among these five selected samples on many of the variables used, but the mean of these five sample means is identical to our sample mean. We conclude that a random selection of one individual from each household results in a lower chance for unmarried individuals to be selected because most unmarried individuals in China live with their parents. We thus chose to use a pooled sample of all individuals from all the households over a sample of individuals based on a random selection from each household.

8. In the 1988 sample, more than 98% of both men and women earned regular salary and bonus and subsidies. In the 1995 sample, no distinction was made between these types of earnings, but more than 97% of men and women earned income from these

two resources. In both 1988 and 1995, 1% or less reported earnings from private businesses.

9. The percentage of individuals in the new sector in 1988 was 4.5%, of which only about 5.0% are individual entrepreneurs and those employed by private enterprises. The percentage of individuals in the new sector in 1995 rose to 16.9%, of which about 12.2% are individual entrepreneurs and those employed by private enterprises (Figures are calculated from Chinese State Statistical Bureau 1998: Table 4-4, Pp. 96-97). The 1995 CHIP does reflect this dramatic increase in the number of individual entrepreneurs and employees of private enterprises. No information is available about the gender compositions in the private sector. Females account for about 48% of workers in the rest of the new sector (Chinese State Statistical Bureau 1997:104).

10. Multiple data sources were used to compile the city-level database. These data sources are

- Urban Socio-economic Research Team of Chinese State Statistical Bureau. 1993. *Chinese Urban Statistical Yearbook*. Beijing: Chinese Statistical Publishing House.
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- Statistical Yearbook of Beijing 1996.
- Statistical Yearbook of Liaoning 1996.
- Statistical Yearbook of Jiansu 1996.
- Statistical Yearbook of Anhui 1996.
- Statistical Yearbook of Heinan 1996.
- Statistical Yearbook of Hubei 1996.
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- Statistical Yearbook of Yunnan 1996.
- Statistical Yearbook of Gansu 1996.
- Statistical Bureau of Datong. 1995. *Statistical Abstract of Datong*.
- Statistical Bureau of Changzhi. 1996. *Statistical Yearbook of Changzhi*.
- Statistical Bureau of Guangzhou. 1996. *Statistical Yearbook of Guangzhou*.
- Foshan Statistical Yearbook Committee. 1996. *Statistical Yearbook of Foshan*. Guangdong People's Publishing House.
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- Shenzhen Statistical Yearbook 1996. Chinese Statistical Publishing House.
- Huizhou Statistical Bureau. 1996. *Huizhou Statistical Yearbook*. Chinese Statistical Publishing House.
- Zhaoqing Statistical Bureau. 1996. *Zhaoqing Statistical Yearbook*.

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11. In the 1995 data, 19.0% of the male respondents were on long- or short-term contracts and 24.2% of the female respondents were such contract workers. This is consistent with Naughton's (1995) account.

12. The gender segregation in labor-force placement is underestimated because of the small number of occupations and industries used.

13. The gender gap in seniority increased substantially in 1995 largely because fewer women who remain employed beyond age 50. In both years, close to 20% (21% in 1988 and 19% in 1995) of men in our sample (still active in the labor force) are 50 and older, but among women in our samples only 9% in 1988 and 8% in 1995 are 50 and older.

14. In both years, very little amount of variance in earnings is explained by gender, reflecting the fact that more men have earnings at the two extremes while women's earnings tend to concentrate toward the lower end as evidenced by a wider variation in men's earnings (see Table 1).

15. As a result of severe undercount of individuals in the new sector, particularly those in the private sector, we might have underestimated the amount of change in the gender gap in earnings between 1988 and 1995 as a result of an increase in employment in the private sector.

16. The *residual* in Equation 1a can be expressed as $(B_m - B_f)X_m$, reflecting the effect of gender-based differential returns to the characteristics of an average male worker. The *residual* in Equation 1b can be expressed as $(B_m - B_f)X_f$, reflecting the effect of gender-based differential returns to the characteristics of an average female worker.

17. We, however, caution against attributing all of this increase to such a pattern because part of the reduced amount of unexplained gender gap in earnings in 1995 might be due to more accurate measures of seniority and education available for the 1995 data.

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